# NAVAL SEA SYSTEMS COMMAND

## SMALL BUSINESS INNOVATION RESEARCH (SBIR)
## SMALL BUSINESS TECHNOLOGY TRANSFER (STTR)

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# WHAT IS SBIR / STTR?

## Small Business Innovation Research (SBIR)

- Established by Congress in 1982
- Funds Research & Development (R&D) at small businesses (≤ 500 employees)
- Increases small business participation in federally funded research and development
- Stimulates technological innovation and increase private sector commercialization of federal R&D

## Small Business Technology Transfer (STTR)

- Established in 1992
- Funds cooperative R&D between small businesses and research institutions
- Creates vehicles for moving ideas from research institutions to market
- Enable researchers to pursue commercial application of technologies

## Navy SBIR/STTR

- 8 Organizations Actively Participate
  - NAVSEA, NAVAIR, ONR, SSP, NAVWAR, MARCOR, NAVFAC, NAVSUP
- NAVSEA has 6 SBIR/STTR Teams with budgets exceeding $100M per year
  - PEO IWS, Team SHIPS, PEO USC, PEO CV, Team SUBS, NAVSEA HQ & DIRECTORATES
- Better, faster, cheaper products and processes for Navy use
- Address Department of Navy needs by commercializing innovative R&D

## DoDINST 5000.85

- DoDINST 5000.85 (3C.3.a(1)(c)) requires that Acquisition Strategies must reflect the PMs understanding of the small business strategy
- DoDINST 5000.85 (3C.3.a(4)(b)) requires Acquisition Strategies provide opportunities for small businesses

# SBIR/STTR – Three Phase Program

| Year 1 | Year 2 | Year 3-5 | Year 6-8 | Year 8+ |
|---|---|---|---|---|
| Topic Development*/ BAA Process | Concept Dev. & Feasibility Demo | Technology Development/ Prototype Experimentation | Prototype Testing & Evaluation Technology Demonstration & Validation | |

**Phase I:**
**Concept Development & Feasibility Study**

- **$240k Contract (SBIR/STTR Funds)**
  - $140K base - 6 months
  - $100K option - 6 months

**Phase II:**
**Full Research, R&D to Prototype**

- **$1.8M Contract (SBIR/STTR Funds)**
  - $600K base – 12 months
  - $600K option – 12 months
  - $600K option – 12 months
- **Commercialization Readiness Prog.**
- **SBIR/STTR Transition Program (STP)**

**Phase III:**
**Commercialization**

- **No Funding Caps (Non-SBIR/STTR $)**
  - No limit on number of awards
  - Can be sole-sourced

- **Managed & Funded by the NAVSEA - SBIR/STTR Program Office**
  - **SBA adjusts cost ceilings each year for inflation**

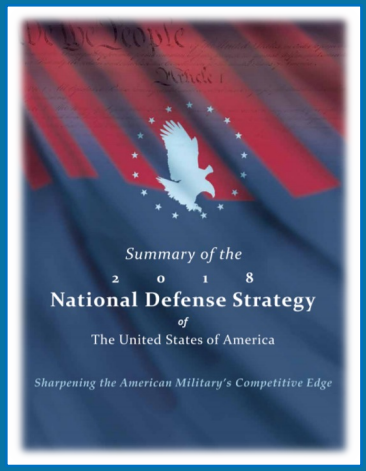
- **Selected, Funded, and Awarded by Navy PMOs & Contracting Orgs**

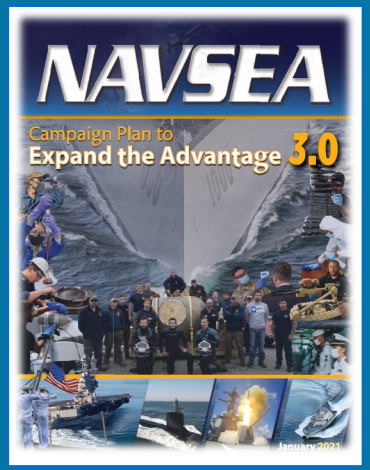
**SBIR/STTR Buys RESEARCH & DEVELOPMENT, Not Parts and Services**

# STRATEGIC FOCUS AREAS

## National Defense Strategy

- **Reform the Department for Greater Performance & Affordability**
- **Preparedness for War Sustainment & Readiness**
- **Build a More Lethal Force**
  - Operational Concepts
  - Lethal, Agile, and Resilient Force
  - Modernize Key Capabilities
  - Cultivate Workforce Talent



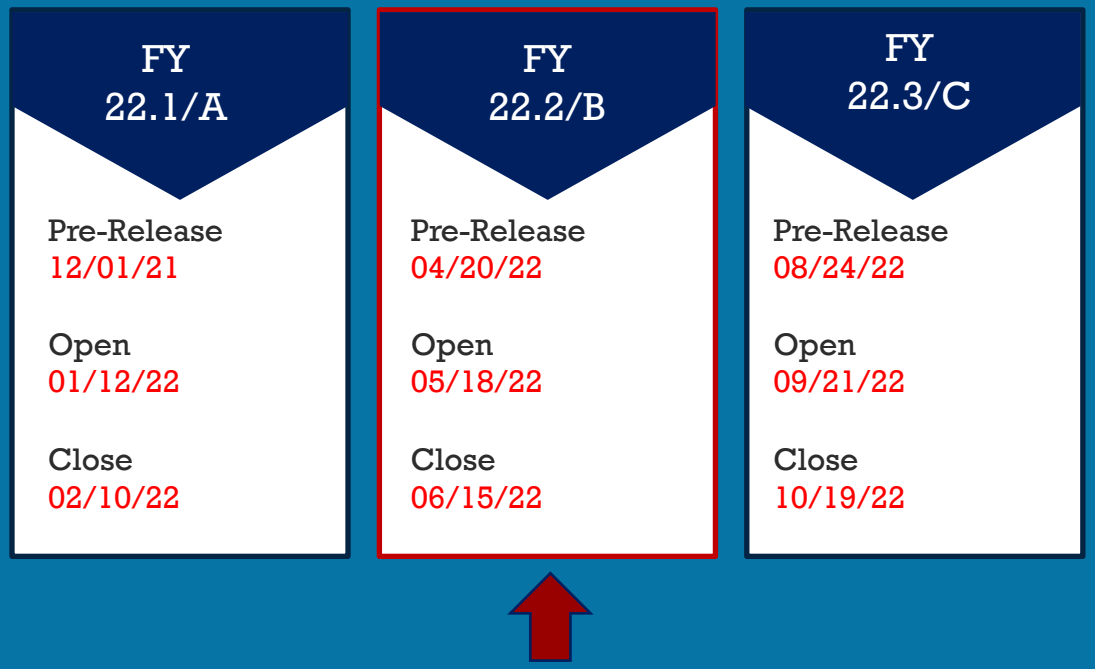




## NAVSEA Campaign Plan 3.0

- **Deliver Combat Power: On-Time Delivery of Combat-Ready Ships, Submarines, and Systems**
  - Maintenance/Sustainment/Readiness
  - Modernization
- **Transform Digital Capability**
  - Digital Engineering
  - AI/Machine Learning
  - Additive Manufacturing
  - Cybersecurity
- **Build a Team to Compete and Win**
  - Partnerships with industry, academia, and other government organizations

# TRADITIONAL SOLICITATION SCHEDULE

- **Broad Agency Announcements (BAAs)** are released 3 times a year
- A DoD Agency-wide announcement includes:
  - DoD Instructions
  - Service/Component Unique Instructions
  - SBIR/STTR Topics
- Not all Components participate in each solicitation
- Multiple solicitations provide opportunities to participate throughout the fiscal year




NAVSEA typically participates in FY XX.1/A
(Contains the largest number of topics)

Occasional and limited participation in
FY XX.2/B and FY XX.3/C calls if funding permits

***Dates subject to change***

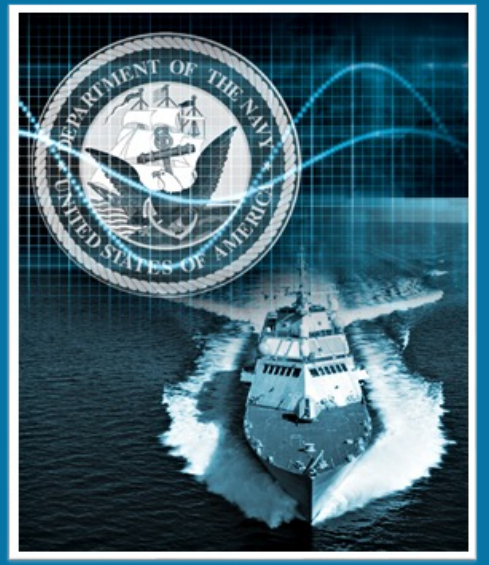
# KEYS TO WRITING WINNING PROPOSALS

1. Each Service and agency is different. Read and follow announcement instructions
2. Know your customer. Make sure your approach is relevant
3. Take advantage of the pre-release. Contact the Topic Author to ask questions
4. Emphasize your innovative approach. Articulate how it compares to the state of the art
5. Clearly and concisely answer who, what, when, where, how, and importantly, why
6. If there are technical barriers…address them!
7. Don't underestimate commercialization. State your plan NOW!
8. Provide a work plan and schedule with tasks that flow smoothly
9. Ensure that the proposed solution is reasonable, realistic, and feasible
10. Check spelling and grammar. Proposals can be difficult to read due to poor grammar

**READ AND FOLLOW ANNOUNCEMENT INSTRUCTIONS!!**

# REACHBACK

- **After 2013, Phase II awards were limited to two per topic per company**
- **SBIR/STTR Policy directive states there is no time limit between SBIR contract awards**
- **"Reaches back" to an older topic that has not yet accrued up to $1.7M in SBIR funding in Phase II**
  - If project has accrued $1.7M in SBIR funding, the request must be submitted as a CRP project
  - Topic must be seeking innovation and R&D; cannot be used as a means of procurement
  - Reachback requires a strategy to transition technology to the warfighter
- **As long as work is within the scope of the topic, we can award a Phase II. *For example:***
  - Company won a Phase I in 2015 for $150k
  - Phase 1 completed but no funding was available for Phase II in 2016
  - In 2018 a need arose where the work done in Phase I was applicable
  - A Phase II was requested; for $1.7M
  - In parallel, paperwork for a Phase III contract was started for $25M
- **Previous Navy SBIR/STTR projects can be found in the "Search Awards Database" at navysbir.com.**



# COMMERCIALIZATION READINESS PROGRAM (CRP)

- **CRP (also known as Phase II.5), requires that the program office have one to one matching Non-SBIR funds available after the project has reached the $1.7M SBIR funding threshold**
  - CRP requires a strategy to transition technology to the warfighter
  - Topic must be seeking innovation and R&D; cannot be used as a means of procurement
- **The purpose of a CRP project is to:**
  - Provide additional funding for SBIR/STTR technologies, products, and services that have potential for rapid transition to Phase III and into the acquisition process
  - Accelerate the transition of technologies, products, and services developed under the SBIR/STTR Programs
- **With the matching funds requirement, a company can receive up to a possible $3.4M ($1.7M SBIR and $1.7M Non-SBIR) to assist projects with strong transition paths. Contract value can be higher but SBIR/STTR $ stops here.**
- **Matching funds must be placed on the associated Phase II contract**

# DATA RIGHTS

- **SBIR/STTR Data Rights are Unique**
  - Applies to all SBIR/STTR awards that fall within the statutory definition of Phase I, II, or III, as described in § 4 of the SBA Policy Directive.
  - **Restricts the Federal Government's use and release of properly marked SBIR/STTR Data only during the SBIR/STTR Protection Period; after the protection period, the Federal Government has a royalty-free license to use for Government Purposes.**
  - Government must protect data for 20 years from beginning of award/Funding Agreement on contracts after 2 May 2019. Contracts prior include 5 year renewable protection.
  - **SBIR/STTR Data Rights are defined in FAR and DFAR 252.227-7018.**
  - An SBC retains title and ownership of all SBIR/STTR Data it develops in the performance of an SBIR/STTR award and retains all rights not granted to the Government. These rights of the SBC do not expire.
  - **Data that is delivered must be marked with the appropriate SBIR/STTR Data Rights legend or notice, in accordance with agency procedures.**

- **SBIR/STTR companies cannot be pressured or coerced to relinquish, transfer, modify, or make data rights a condition for Phase III awards.**
- **Future company value is based on the Intellectual Property and Data rights – <u>so protect them</u>!**

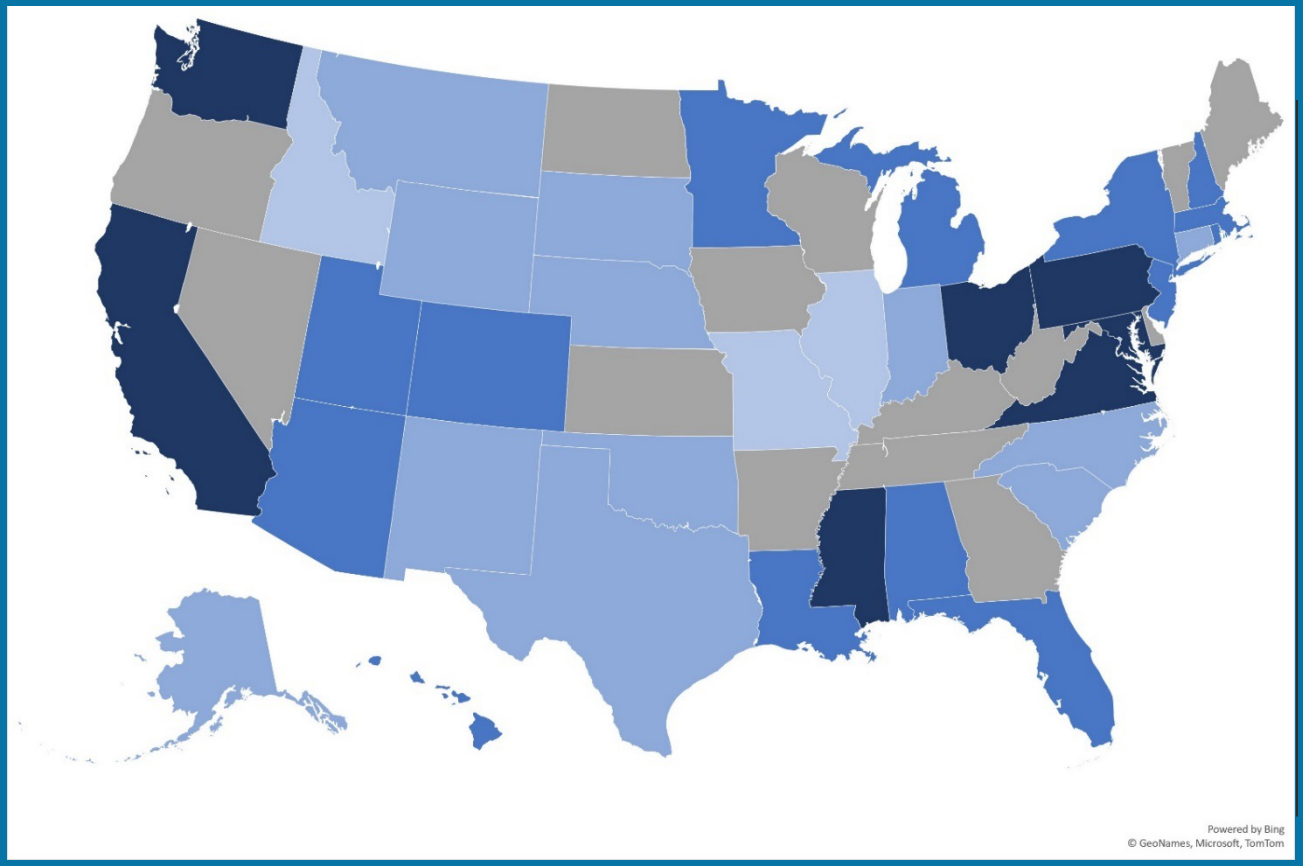
**SBIR/STTR Data Rights Belong to the Small Business!**

# PHASE III – IT'S NOT JUST DATA RIGHTS

**Phase III Requirements:**

- **The Government must award Phase III contracts to SBIR/STTR firms that developed the technology to the greatest extent practicable.**
  - This statute justifies sole source follow-on contracts.
  - The requirement for competition has been satisfied in Phases I and II.
  - The Federal Government may terminate the Funding Agreement under certain conditions.
- **The Government must notify the SBA if it intends to pursue R/R&D, production, services, or any combination thereof of a technology developed under an SBIR/STTR award, with an entity other than the SBIR/STTR awardee.**
  - The SBA can compel Government (DoD) to terminate a contract if that contract should have gone to the SBIR/STTR company.
- **For Phase III SBIR/STTR awards, it is sufficient to state for purposes of a Justification and Approval, if one is deemed required by the agency, that the project is an SBIR/STTR Phase III award that is derived from, extends, or completes efforts made under prior SBIR/STTR Funding Agreements and is authorized pursuant to 15 U.S.C. 638(r)(4). Further justification is not needed.**
  - There is no limit on the value or number of Phase III contracts.
  - Phase III funds come from a Program Office (NOT SBIR/STTR "seed funding).

# TRANSITION BY STATE – PHASE III

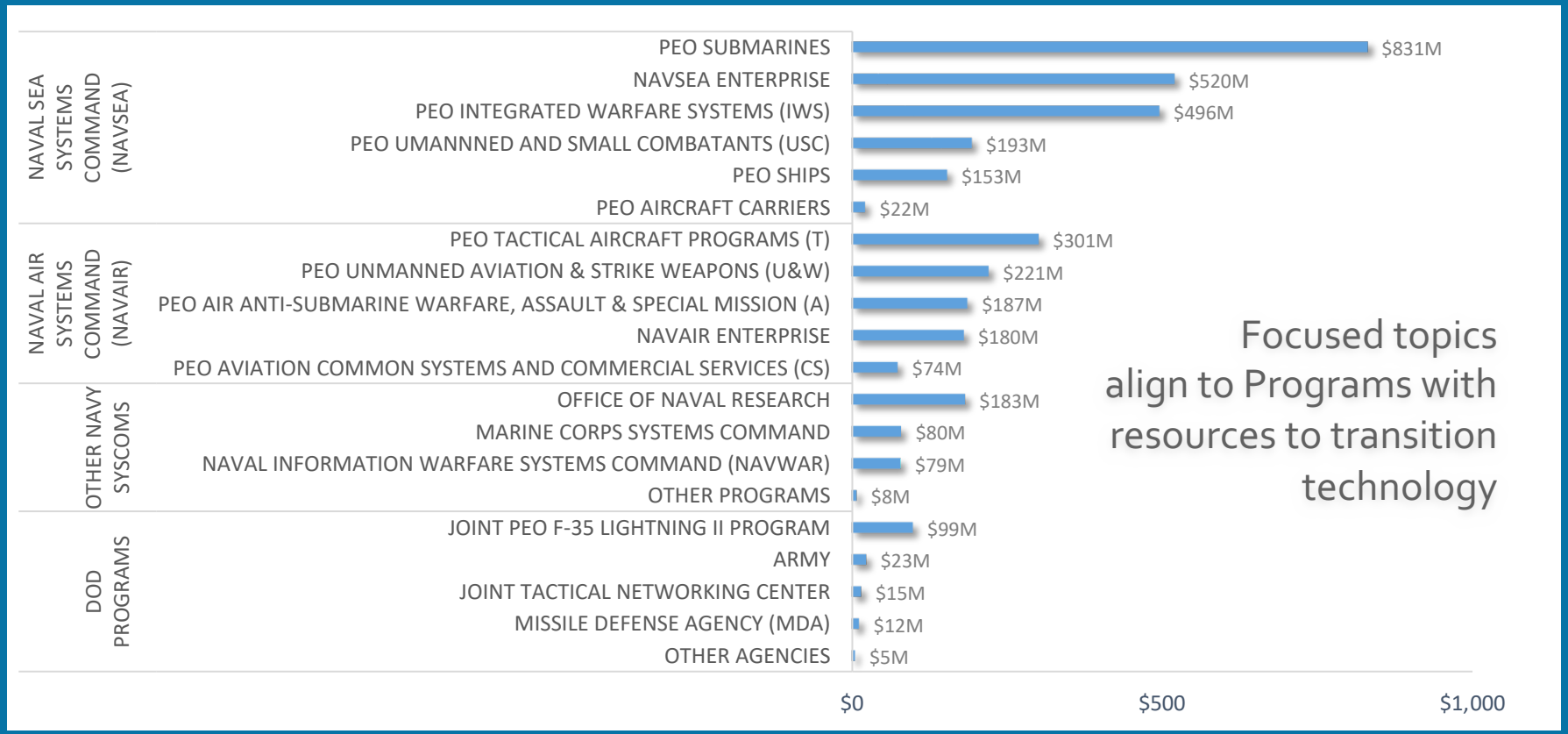



**Navy is 50% of DoD Transition (Phase III)**

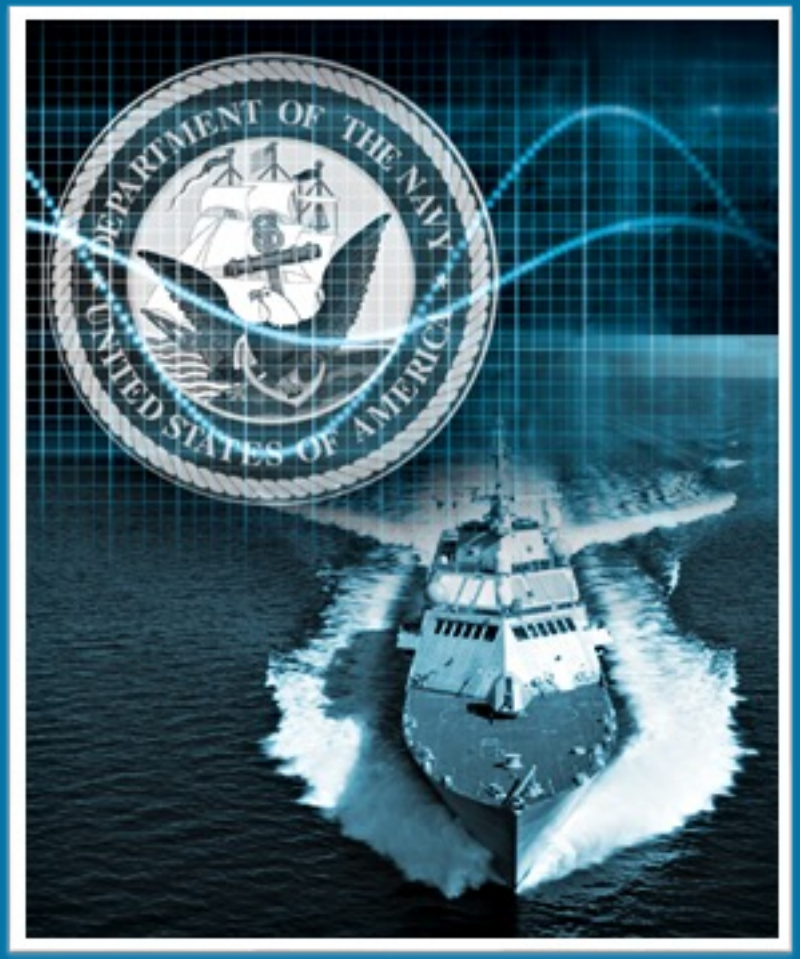
Source: Federal Procurement Data System-Next Generation (FPDS-NG)

**+3,400** Funding Actions | **+1,000** Contracts | **$4B** Over 5 Years

# TRANSITION BY PROGRAM - $4B IN 5 YEARS



# SBIR/STTR TRANSITION PROGRAM (STP) BENEFITS




- Premier Navy program to foster transition
- Small businesses learn how to work with the Navy and identify opportunities to transition their technologies
- Small businesses are instructed on the government acquisition environment and policies
- Small businesses are provided marketing expertise
- The STP program culminates in the Forum for SBIR/STTR Transition (FST)

# NAVY FORUM FOR SBIR/STTR TRANSITION (FST)

**Featured Technologies:**

- Air Platforms
- Biomedical
- Engineered Resilient Systems
- Energy & Power Technologies
- Ground & Sea Platforms
- Materials & Manufacturing Processes
- Modeling & Simulation Technology
- Sustainment
- Advanced Electronics
- Autonomy
- Battlespace Environments
- C4I
- Cyber
- Electronic Warfare
- Human Systems
- Sensors

- 46, total projects being showcased on 4-5 April at the Navy FST Showcase Booth (537). 18 of them are NAVSEA projects. In addition to, 4 companies participating in the Demo Day on 6 April.

# SPONSORED STP PROJECTS

| Sponsoring Program | Capability Category | Project Title | Topic # | Company |
|---|---|---|---|---|
| HQ/Directorates | Materials & Manufacturing Processes | Rapid Identification of Effects of Defects within Metal Additive Manufacturing (RIED-AM) | N1A-T013 | Intelligent Automation, Inc. |
| HQ/Directorates | Materials & Manufacturing Processes | Augmented/Virtual Reality Data Architecture Methodology and Reference Platform | AF191-005 | Mira Labs |
| PEO Integrated Warfare Systems (IWS) | C4I | Universal Sensor Application Programming Interface (API) for Undersea Data | N19B-T035 | ARiA |
| PEO Integrated Warfare Systems (IWS) | C4I | Nondestructive Evaluator for Polymer Ablatives (NEPAL) | N18A-T011 | Intelligent Automation, Inc. |
| PEO Integrated Warfare Systems (IWS) | Modeling & Simulation Technology | Artificial Intelligence Real-Time Track Modeling and Simulation for Combat Systems | N192-117 | Marine Acoustics, Inc. |
| PEO Integrated Warfare Systems (IWS) | C4I | Artificial Intelligence Real-Time Track Modeling and Simulation for Combat Systems | N191-032 | Mosaic ATM, Inc. |
| PEO Integrated Warfare Systems (IWS) | Materials & Manufacturing Processes | Composite Structures for Missile Systems | N192-108 | Pacific Engineering, Inc |
| PEO Integrated Warfare Systems (IWS) | Ground and Sea Platforms | Plug-and-play Analytical Framework for Distributed Structured and Unstructured Data Sets for Condition Based Maintenance Plus (CBM+) | N171-071 | Progeny Systems, Corp. |
| PEO Integrated Warfare Systems (IWS) | Sensors | Integration of Automatic Dependent Surveillance | N193-A01 | Skyward, Ltd. |

# SPONSORED STP PROJECTS

| Sponsoring Program | Capability Category | Project Title | Topic # | Company |
|---|---|---|---|---|
| PEO Ships | Human Systems | Advanced Ship-handling Simulators | N18A-T014 | D'Angelo Technologies, LLC |
| PEO Ships | Ground & Sea Platforms | Durable Foreign Object Debris (FOD) Screens for Air Cushion Vehicles - MSC P4579 | N192-115 | Materials Sciences, LLC |
| PEO Subs | C4I | Real-time Decision Aid for Enhancing Ship's Self-defense | N093-192 | ASSETT, Inc. |
| PEO Subs | Electronic Warfare | Efficient 3-inch Acoustic Device Countermeasure (ADC) Depth Control System Technology | N191-023 | Great Lakes Sound & Vibration, Inc. |
| PEO Subs | Materials & Manufacturing Processes | Hydrophobic and wide-angle anti-reflecting nanostructured coatings on hemispherical domes and windows; including high-refractive index surfaces | N171-045 | HighRI Optics, Inc. |
| PEO Unmanned & Small Combatants (USC) | Sensors | Shallow Water and Surf Zone Minehunting (MAD SWARM) | AF08-T008 | Physical Sciences, Inc. |
| PEO Unmanned & Small Combatants (USC) | Materials & Manufacturing Processes | Remotely Operated Vehicle (ROV) Deployed Underwater Attachment | N19A-T011 | Texas Research Institute Austin, Inc. |
| PEO Unmanned & Small Combatants (USC) | Autonomy | Unmanned Surface Vehicle (USV) and Unmanned Underwater Vehicle (UUV) Autonomous Behavior Development | N193-A02 | Trident Systems, Inc. |
| PEO Unmanned & Small Combatants (USC) | C4I | Unmanned Surface Vehicle (USV) and Unmanned Underwater Vehicle (UUV) Autonomous Behavior Development | N193-A02 | Vy, Corp. |

# HEADQUARTERS / DIRECTORATES

## Atmospheric Plasma Solutions

## SBIR Topic #: N151-022

**Objective:**

Produce a prototype Atmospheric Plasma Coating Removal (APCR) system that effectively removes organic coatings from metal substrates of interest to the U.S. Navy while meeting the safety and grounding standards required.

**Benefits:**

- Cost-Savings
- Chemical & Abrasive-free Coating Removal + Surface Preparation Process
- Works on Convoluted Surfaces
- Does not Damage Metal Substrate or
- Alter Surface Topography (great for inspections)
- Minimal Waste
- Safer for workers
- Eliminates Impact related Injuries

## Transition Pathway

- **Individual repair shops can purchase** the Plasma Blast unit **using in-house funds.**
- **TRF Bangor has already purchased two units.**
- Follow-on **Phase III contracts expected once tool is certified** for daily use in TRFB production operations and Process Instructions.
- **Safety and Environmental Impact information will be shared** with other sites enabling additional Phase III opportunities

# PEO SHIPS



## HydroActive Shaft Sealing Technology

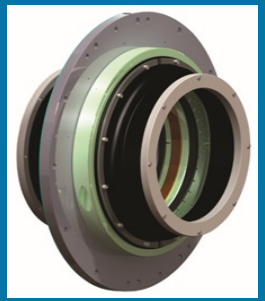
## SBIR Topic #: N04-073

**Objective:**

Development of a bulkhead shaft sealing device that can be deployed either automatically or manually to prevent excessive flooding in a casualty situation.

**Benefits:**

- Cost-Savings
- Low Total Ownership Cost
- Simplified installation
- Reduces Installation and Operation Requirements
- Lighter Weight
- Reliable emergency response
- Extended Seal Life
- Greater Shaft Motion and Vibrations allowed during operation
- Automatic backup
- Maintained Operations in the event of an emergency
- Eliminates Premature Wear
- Ensures an effective seal



## Transition Pathway

- Since 2009, MIDE has installed 334 HydroActive Shaft Seals on Multiple Vessel Classes
- Vessel Classes include: Arleigh Burke DDG Destroyers, both LCS variant Amphibious Transport Dock ships.
- Midé's bulkhead shaft seal technology is also being used on the Mark VI Patrol Boats. Further commercialization of HydroActive seals is occurring in the dredger vessel industry
- Midé will replace the bulkhead shaft seals on the San Antonio-class LPDs.
- Midé's LCS Freedom Variant stern tube seal with HydroActive backup technology has passed successful shock, vibration and operational lifetime tests. The first stern tube seal installation on an LCS Freedom Variant vessel took place ~Q4 2017

# PEO INTEGRATED WARFARE SYSTEMS (IWS)

## Land Based Persistent Radar (LBPR)

## SBIR Topic #: N04-138, N07-213, N08-219

**Objective:**

Provide Periscope Detection and Discrimination (PDD) and Surface Search Capabilities on a 24/7 basis to key navigation choke points in the world.

**Benefits:**

- LBPR provides advanced technologies for periscope detection and enhancement of force protection.
- LBPR is an unmanned system that alerts when there is a high probable contact that is being tracked.
- Operate autonomously with audible and visual cues when a threat is encountered.
- Uses components with very low failure rates and contains no consumables that require replenishment.

## Transition Pathway

- LBPR algorithms are being integrated into the Next Generation Surface Search Radar (NGSSR), which provide the ability to detect, localize and track adversary submarine periscopes.

# PEO CARRIERS

## Low Cost, High Reliability Proximity Switches

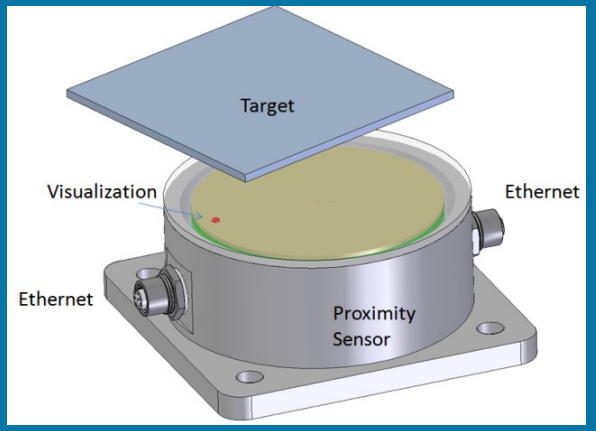
## SBIR Topic #: N111-038

**Objective:**

Develop next generation high reliability, low-cost switches with smart functionality that can be integrated into a ship's network for greater precision control and total positional awareness. Proximity switches are a vital control element for shipboard operations that provide positional awareness of controlled objects, surfaces and devices.

**Benefits:**

- Network of proximity switches that conform to existing standards and provide real time total positional awareness of targets
- Increased operational efficiency
- Enhanced safety to personnel
- Reduced maintenance requirements
- Customizable multidiscipline sensing devices




## Transition Pathway

- Transition potential to aircraft carriers and surface ships that require positional awareness of controlled objects, surfaces, and devices.
- A major power management company is licensing the SBIR technology for supporting manufacture and sustainment.
- SBIR effort transitioned to an OSD Rapid Innovation Funds (RIF) project and completed as a Phase III project
- Shock, vibration, and EMI qualification testing completed and approved
- DLA processing NSN update request for the new switches to make them available through the Navy stock system

# PEO UNMANNED & SMALL COMBATANTS (USC)

## Areté Associates

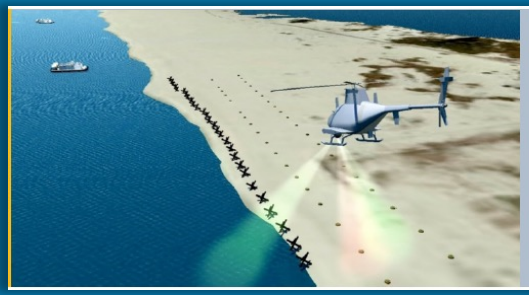
## SBIR Topic #: N06-013

**Objective:**

Develop a real-time automated capability to detect mission-relevant discrete medium-to-heavy obstacles from AN/DVS-1 Coastal Battlefield Reconnaissance and Analysis (COBRA) airborne passive multispectral imagery of the beach zone.

**Benefits:**

- Data tracks could consist of hundreds of multispectral image spots, which the operator would manually review, resulting in extended PMA timelines and additional burdens on the operator.
- Combined real-time AOD/MFD processing achieved during this effort exceeded initial expectations and threshold requirements.
- Algorithm updates were implemented into the COBRA Block I Real-Time Processor (RTP).
- RTP output of the AOD Algorithm can be processed by the COBRA Command and Control, Data Display and Dissemination (C3D3) software for viewing and dissemination of obstacle threats.



**COBRA AUTOMATIC OBSTACLE DETECTION (AOD)**

*Real-time automated detection of discrete medium-to-heavy obstacles in the beach zone, giving the warfighter an essential edge in amphibious assault breaching missions.*

## Transition Pathway

- The transition strategy was to integrate the SBIR-developed real-time AOD algorithms and software into the COBRA system, preserving and enhancing both COBRA's airborne sensor hardware and its Post Mission Analysis (PMA) ground station. This provided COBRA with advanced automated discrete medium-to-heavy obstacle detection capabilities to supplement its core minefield detection mission. This capability has been integrated and demonstrated in the COBRA Block I system. Areté was awarded a Phase III contract from Program Executive Office (PEO) Unmanned and Small Combatants (USC) on a sole source basis to serve as the prime contractor on the COBRA program Block I Low Rate Initial Production (LRIP) and has delivered five operational systems to the fleet.

# QUESTIONS?